Claim 1 (amended).   An isotopic identification of a product comprising a mathematical array of concentrations of isotopes, said concentrations of isotopes being the result of an analysis of the natural occurring isotopes of said product, [ratio of isotope concentrations found in a product,] said mathematical array being presented in a readable form, said readable form being comparable to analytical results for the naturally occurring isotopes of unknown products, whereby unknown products can be identified with [and known products can be] and differentiated from [fraudulent] said unknown products, said readable form being indexed to stored product information, whereby products can be securely traced through manufacturing and the marketplace and distinguished from said unknown [other] products.

Claim 2 (amended).   The isotopic identification of Claim 1 wherein said concentrations of isotopes are chosen from the group of isotopic concentrations consisting of concentrations of isotopes, concentrations of isotopes and their errors, ratios of isotope concentrations, [and] ratios of isotope concentrations and their errors and combinations thereof.

Claim 3 (amended).   The isotopic identification of Claim 1 wherein said readable form is chosen from the group of readable forms consisting of serial numbers, bar codes, and other numerical and alphabetical indicia.

Claim 6 (amended).   The isotopic identification of Claim 1 wherein said isotopes are of any of the 13 stable isotopes of the group of elements consisting of carbon, hydrogen, oxygen, nitrogen [and], sulfur and combinations thereof.

Claim 7 (amended).   The isotopic identification of Claim 1 wherein the error of the identification is chosen by the mathematical array chosen, the number of concentrations of

isotopes utilized in said array, and the portion of said array compared with the isotopic analysis of [an] said unknown product.

Claim 8 (amended). The isotopic identification of Claim 1 wherein the product from which the concentrations of isotopes are analyzed and formed into a mathematical array includes active pharmaceutical ingredients, excipients of drug products, impurities in drug products, raw materials and drug products, combustible fuels, additives to combustible fuels, environmental [and], natural occurring products, explosives [and] products, ammunition, gun powder, crude oil, petroleum distillates, hazardous waste, paper, ink, tire materials, paints, and other coatings.

Claim 17 (amended). The method of identifying products comprising the steps of analyzing a product for the concentration of isotopes, arranging the concentrations of said isotopes [in] into a mathematical array, formulating said mathematical array [in] into a readable form, assembling product information, indexing said product information and said readable form to an index, and maintaining said index and said product information.

Claim 18 (amended). The method of Claim 17 further comprising the step of measuring the concentration of said isotopes in a comparable substance and comparing the concentrations of isotopes with the mathematical array in readable form to identify [the product] said substance.

Cancel Claim 20 without prejudice to Applicant.

Add new Claim 20: --The method of Claim 17 wherein said concentrations of isotopes are chosen from the group of isotopic concentrations consisting of concentrations of isotopes, concentrations of isotopes and their errors, and ratios of isotope concentrations, ratios of isotope concentrations and their errors and combinations thereof.--

Add new Claim 21: --The method of Claim 17 wherein said mathematical array is chosen from the group of mathematical arrays consisting of a list of a plurality of concentrations,

a list of a plurality of isotopic ratios, a list of a plurality of mathematical products of isotopic

concentrations, a list of a plurality of mathematical products of isotopic ratios, groups of any

such lists, groups of any such mathematical products, groups of any such ratios, groups of any

such concentrations, mathematical products of any such concentrations plus or minus their error

added, mathematical products of any such ratios plus or minus their error added, any such

concentrations, ratios, lists, groups, and mathematical products in quadrature, isotopic ratios of

any such mathematical products, ratios of said concentrations plus or minus their errors added,

any of such concentrations plus or minus their errors added, factor analysis of any such

concentrations, ratios, lists, groups, mathematical products and any determinants and

combinations thereof.--

Claim [21] 22 (amended).   The method of Claim 17 wherein said readable form is a

machine readable form of said mathematical array, said product information is made on a

machine, said machine readable form being indexed to said product information.

Claim [22] 23 (amended).   The method of Claim [21] 22 wherein said product

information may be displayed by identifying said machine readable form and indexing the same

to said product information.

Claim [23] 24 (amended).   The method of Claim [21] 22 wherein said product

information may be scrolled and/or downloaded or printed as desired.

Claim [24] 25 (amended).   The method of Claim [21] 22 further comprising measuring

the concentration of said isotopes in a comparable substance and comparing the isotopic

concentrations of said comparable substance with said mathematical array of said product.

Claim [25] 26 (amended).   The method of Claim [24] 25 wherein said mathematical

array includes ratios, concentrations, and products and said comparing step comprises comparing

each of said ratios, concentrations or products step by step to identify said [unknown product] comparable substance within the error desired.

Claim [26] 27 (amended).   The method of Claim [24] 25 wherein said concentrations of isotopes are chosen from the group of isotopic concentrations consisting of concentrations of isotopes, concentrations of isotopes and their errors, and ratios of isotope concentrations, ratios of isotope concentrations and their errors.

Claim [27] 28 (amended).   The method of Claim [24] 25 wherein said readable form is chosen from the group of readable forms consisting of serial numbers, bar codes, and other numerical and alphabetical indicia.

Claim [28] 29 (amended).   The method of Claim [24] 25 wherein said mathematical array is chosen from the group of mathematical arrays consisting of a list of a plurality of concentrations, a list of a plurality of isotopic ratios, a list of a plurality of mathematical products of isotopic concentrations, a list of a plurality of mathematical products of isotopic ratios, groups of any such lists, groups of any such mathematical products, groups of any such ratios, groups of any such concentrations, mathematical products of any such concentrations plus or minus their error added, mathematical products of any such ratios plus or minus their error added, any such concentrations, ratios, lists, groups, and mathematical products in quadrature, isotopic ratios of any such mathematical products, ratios of said concentrations plus or minus their errors added, any of such concentrations plus or minus their errors added, factor analysis of any such concentrations, ratios, lists, groups, mathematical products and any determinants and combinations thereof.

Claim [29] 30 (amended).   The method of Claim [24] 25 wherein the isotopes available are any of the 224 existing stable isotopes of known elements.

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Claim [30] 31 (amended).   The method of Claim [24] 25 wherein said isotopes are of

any of the 13 stable isotopes of the group of elements consisting of carbon, hydrogen, oxygen,

nitrogen [and], sulfur and combinations thereof.

Claim [31] 32 (amended).   The method of Claim [24] 25 wherein the error of

identification is chosen by the mathematical array chosen, the number of concentrations of

isotopes utilized in said array, and the portion of said array compared with the isotopic analysis

of [an] said unknown product.

Claim [32] 33 (amended).   The method of Claim [24] 25 wherein the product from

which the concentrations of isotopes are analyzed and formed into a mathematical array includes

active pharmaceutical ingredients, excipients of drug products, impurities in drug products, raw

materials and drug products, combustible fuels, additives to combustible fuels, environmental

and natural occurring products, explosives and ammunition, gun powder, crude oil, petroleum

distillates, hazardous waste, paper, ink, tire materials, paints and other coatings and other

synthetic materials.

Claim [33] 34 (amended).   The method of Claim [24] 25 wherein said concentrations

of isotopes are chosen from the group of concentrations of isotopes consisting of bulk phase

analysis and specific compound analysis.

Claim [34] 35 (amended).   The method of Claim [33] 34 wherein said bulk phase

analysis includes dual inlet isotope ratio mass spectrometry (irMS) and on-line combustion

coupled with high resolution isotope ratio monitoring/mass spectrometry (irmMS).

Claim [35] 36 (amended).   The method of Claim [33] 34 wherein specific compound

analysis includes gas chromatography coupled with irMS (irmGCMS) and liquid

chromatography coupled with irMS (irmLCMS).

Claim [36] 37 (amended).   The method of Claim [24] 25 wherein said analyses includes nuclear magnetic resonance.

Claim [37] 38 (amended).   The method of Claim [24] 25 wherein said readable form is a machine readable form and said product information is stored in memory on a machine together with the index, said machine readable form, index and product information being interlinked, said machine readable form once identified through the index presents stored product information in displayed form.

Claim [38] 39 (amended).   The method of Claim [37] 38 wherein said product information may be scrolled through.

Claim [39] 40 (amended).   The method of Claim [37] 38 wherein said product information may be printed.

Claim [40] 41 (amended).   The method of Claim [37] 38 wherein said product information may be accessed through said index from said machine readable form of said mathematical array.

Add the following claims:

--42.   An identification for a composition comprising an arrangement of empirical information derived from an analysis of a plurality of stable isotopes of at least one of the chemical elements in said composition, said arrangement comprising a numerical array of said empirical information in a readable form.

43.   The identification of Claim 42 wherein said empirical information further comprises the tolerable error of said analysis.

44.   The identification of claim 42 wherein said composition is a substance manufactured in an industry chosen from the group of industries consisting of the chemical,

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petroleum, pharmaceutical, biomedical, biochemical, environmental, paint, explosive material and combustible fuel industries.

45.   A method of providing an objective identification of a composition comprising the steps of analyzing a plurality of stable isotopes of at least one chemical element of said composition, deriving empirical information from said analyzing step, and arranging said empirical information into a numerical array.

46.   The method of Claim 45 wherein said analyzing step comprises determining a ratio of measured concentrations of two or more stable elements of said composition.

47.   A method of tracing an unknown composition to a known composition comprising the steps of performing the method of Claim 46 for at least one known composition, indexing said numerical array for said known composition in a readable form into an index linked to product information for said known composition, performing the method of Claim 46 for said unknown composition, comparing said numerical arrays for said unknown composition to said numerical arrays of said index, determining whether said numerical array for said unknown composition matches any numerical array contained in said index, and matching said numerical arrays of said unknown composition to the numerical array of a known composition thereby identifying said unknown composition.--

Respectfully submitted,

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